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THE GEOGRAPHY OF AMERICAN CITIES.

BY

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Introduction.—Students of municipal conditions generally ascribe the aggregation of population in cities to one or more of three main causes: commercial, industrial, or political activity. Thus, New York, New Orleans, Chicago, or San Francisco would be classed as commercial; Pittsburg, Fall River, or Birmingham as industrial; and Washington and many of the State capitals as political centres. In the first two classes at least, and in many cases in the last also, the cause of the growth of a city in any particular location may be traced back a step farther and find its foundation in the geographical conditions which have favoured commerce, industrial activity, or political importance. In some cases the conditions have been such as to bring the city almost exclusively under one type, as the commercial importance of New Orleans; while others may in varying degree come under any one of the three classes, as Boston. There is, however, still another class of cities which are neither commercial nor industrial, nor political in character—what may be called the social centres, popular or health resorts grown up in response to pleasing geographic conditions, either climate or location, as Newport, Atlantic City, or Asheville. Among the cities of the United States examples of all classes may be found, the study of a few typical examples of which serves to bring out the conditions that may be regarded as controlling factors for each class.

Commercial Centres.—Commercial centres grow up in response to geographic conditions favouring trade and communication at points which are natural outlets from, or points of entry to, well-settled, productive areas. The means of communication may be varied—by water, on the ocean, lakes, rivers, or canals, or on land, by

railroads, wagons, or pack-trains, and it may be such as to cover both home and foreign countries or only a limited area of one country. According to the local conditions, therefore, all commercial cities might be classed under two heads—(1) centres of foreign commerce, ocean ports, and some river ports; and (2) centres of domestic commerce, lake, canal and most river ports, and railroad cities. With hardly a single exception all the great commercial centres of both classes, in the United States, are located on bodies of navigable water, while those so situated as to enjoy ocean commerce are, as a rule, the most important. Chicago and St. Louis are the notable exceptions.

The natural conditions favouring the growth of important centres of foreign commerce are uniform throughout the country; a good harbour with a natural or easily-improved deep channel, safe anchorage, and shores of such a character as to facilitate the construction of docks and the handling of freight. At the present time the question of railroad facilities on the water front is an important consideration in the establishment of new, or the improvement of old, ports. But harbourage alone is not enough; the port must also lie near a wide extent of productive country with good routes of travel, either rivers and canals or railroads, by which goods for export may be collected, and goods imported may be distributed throughout the region. New York is a good example; for, with an excellent natural harbour and many miles of water front, her commercial superiority over the other Atlantic cities dates only from the completion of the Erie Canal, by which cheap and ready communication was afforded with the productive areas of the central West through the natural gateway along the Mohawk Valley. The other ports—Boston, Philadelphia, and Baltimore—up to that time the commercial rivals of New York, all possessed good harbour facilities, but, with no Mohawk valleys to be improved for their benefit, soon fell behind. The importance of river communication is illustrated in the case of New Orleans, which benefited by the vast area reached by the navigable courses of the Mississippi and its tributaries, and ranked as the first port in the country until the development of the trunk line railroads about 1870. For the railroads, with other conditions equal, the shortest route through the most populous country was the best. It was only natural, then, that New York, with its easy route through the Mohawk Valley and down the Hudson, with a better harbour, located several hundred miles nearer the important markets of western Europe, and already the greatest port on the Atlantic coast, should gain the supremacy.

Through a fortunate combination of geographic conditions the coasts of the United States are particularly adapted to a great ocean commerce, there being many good natural harbours suitable for commercial centres, with but relatively little expense in improvement. The main factor in producing the harbours has been a depression of the coastal areas by which the mouths of the rivers and the lower parts of their valleys have been entered or embayed by the sea. The drowned rivers have made good ship channels for entrance; the projecting headlands, made by the unsubmerged inter-stream uplands, have furnished the best of natural breakwaters to protect the shipping from storms; and the region about the depressed areas is in most cases well suited for the growth of a large city. Another factor which has favoured the growth of the larger American ports has been the absence of lofty mountains, which would act as effective barriers to communication with the extensive productive areas of the interior.

The importance of the coastal depression may be seen in the fact that, with the single exception of New Orleans, every important port in the country owes its harbour to the presence of a drowned river; not only in the case of the Atlantic ports, where the depression has been most marked, but also on the Gulf and Pacific coasts as well. Perhaps the most striking single instances are those of Philadelphia and Baltimore, which, though over 100 miles from the sea, rank as the third and fourth ports of the Atlantic coast. The position of these ports nearer to the productive West is an advantage in their favour over New York and Boston, and has furnished the ground for many of the arguments over freight differentials; but the advantage of decreased distance is offset by the absence of any easy route across the Appalachians such as is afforded by the Mohawk Valley for the east-bound traffic to New York and Boston. Of these latter two ports New York again benefits by the open valley of the Hudson River, which not only gives an easy route for the railroads but also makes the last link in the chain of water communication from as far west as Chicago, Milwaukee, and Duluth. Boston, on the other hand, otherwise most favourably located for European commerce, suffers through the presence of the Berkshire Hills, over which the railroads are obliged to ascend relatively heavy grades.

The southern Atlantic ports—Newport News, Norfolk, Savannah, and Charleston—are in varying degree hampered by the same difficulty of less ready communication with the interior. Each of the ports named lies in a region locally rich and productive, but

still relatively limited in extent by the presence of the higher hills of the Piedmont area and the Appalachian chains to the west. The southern Appalachians are also wider, in an east-west direction, than the Appalachian belt of Maryland and Pennsylvania; the ridges are higher and do not offer the advantages which Philadelphia and Baltimore possess in the lower notches of the Cumberland Gap and the transverse courses of the Ohio and Susquehanna Rivers; the high scarp of the Blue Ridge is difficult of ascent, and the higher ridges and plateau country beyond mark a region which in the absence of natural routes of travel, offers little to encourage railroad-building. The ports are therefore restricted to the tributary area of the coastal region, and are of consequently less importance.

The Gulf ports, of which New Orleans and Galveston are the chief, show not only the geographic control of location but also a control of the character of their commerce as well. New Orleans, for example, with all the great area of the central and southwest States tributary to her as a port down the natural highways of the Mississippi and its side valleys, ranks as the second export port of the country, with almost one-fourth as much in value as New York; but in the amount of imports she is far behind, with only one-twentieth as much as New York. The same condition is found at Galveston, which exports one-sixth as much as New York but imports hardly one five-hundredth as much. These conditions may be explained in great part by the fact that the two ports draw large quantities of cotton and wheat and other food stuffs from the region round about for export, while the articles of import, the necessities of life, must come by the shorter, quicker overland routes.

On the Pacific coast, San Francisco, Portland, and the Puget Sound ports are limited in the extent of their tributary area as were the southern Atlantic ports. They are the natural outlets for the entire west-going or Pacific trade of the country, but the wide, unproductive area of the American Desert, and the intervening barriers of the Rocky Mountains, the Sierras, and the Cascade Range, have necessarily restricted the extent of the area directly tributary to them. The geographical conditions, coupled with the fact that the demands of their Asiatic trade are less than those of the countries of western Europe, readily explain why the Atlantic ports are in comparison of so much more importance. With the completion of the Panama Canal it seems probable that the Pacific ports will be even less important. New Orleans and Galveston, as the natural Gulf outlets of the productive interior, must certainly

take the Pacific-going traffic of the States east of the Rocky Mountains, except, perhaps, the far northern ones, thus restricting the activities of the Pacific ports more and more to the region west of the mountains.

The greatest inland commercial centres have also been stimulated by their water traffic; they include the cities ranged along the Great Lakes, and several river cities, as St. Louis, Pittsburg, and Cincinnati. The Lake ports are interesting from the fact that their trade has often been almost entirely in the shipment of one, or perhaps two, classes of goods. Duluth and several smaller Lake Superior ports, for example, have grown up with the development of the iron mines and the shipment of ore to the mills of the eastern States. Chicago and Milwaukee are the greatest grain and flour shipping points. And the Lake Erie cities receive the products from the western lake ports and send back principally coal from the near-by Pennsylvania and Ohio fields. All of these lake ports are also railroad centres, into which converging lines act as feeders from the country round about. The importance of the lake traffic may be seen in the fact that at the time the Pennsylvania Railroad was projected the suggestion to run a line from the west to the Atlantic coast without touching the Lakes would, it was held, if carried out, mean the failure of the scheme. Up to that time every railroad between the east and the west had a lake terminus. The growth of the Lake ports is therefore due partly to the favourable conditions of water transportation, and partly to the extent of productive country acting as a feeder to their trade. The fact may be made clearer by contrasting the conditions on the American and Canadian sides of the Lakes. The one is thickly settled, with great natural resources in iron ores, agriculture and coals, with large cities and flourishing industries. The other, just as rich in ores but almost a trackless forest, has only a scanty population and a single large city, Toronto.

Of the river ports St. Louis received an important impetus from its location on the Mississippi in the days when river navigation was at its height. Pittsburg ranks as a commercial centre because of its position at the confluence of the Allegheny and Monongahela Rivers making it the natural gateway to the West. The advantage of such a location is evident from the fact that the total annual tonnage of Pittsburg's commerce exceeds that of the Suez Canal. Cincinnati, Memphis, Vicksburg, Kansas City, Dubuque, and others have in like manner been stimulated in their growth through the advantage of inland navigation.

Industrial Centres.—Many of the seaport cities which rank pre-eminently as commercial centres are also important as industrial centres, as a logical result of the fact that the mere location and established ready communication are highly favourable, not only for the supply of raw material but also for the easy marketing of the finished product both at home and abroad. New York furnishes a good example, ranking not only as the first port but also as the most important manufacturing city of the country; Chicago, the largest of the domestic commercial centres, is the second largest industrial centre, and Philadelphia, the third port, ranks third in industry. Inland commercial centres are often largely so because of their industrial importance. But there is still a class of cities which is quite distinctly industrial as the result of the geographic conditions. They separate themselves into two classes—(1) those which grow up in response to natural resources for power, and (2) those which grow up in response to proximity to raw materials. Most of the New England cities are of the first class; Birmingham, Pittsburg, and mining cities in general are of the second class.

Probably nowhere else in the country is the influence that natural power has exerted over industrial growth so marked as in the New England States. Over a region drained by several maturely-developed river systems heavy glaciation served to interrupt seriously the organized drainage, leaving in its place an abundance of waterfalls and lakes and ponds from which the rivers flowed in diverted, steepened courses. Along these courses water-power was available almost everywhere, mills were located on their banks, villages sprang up about the mills, and the present cities are the result. Massachusetts alone has more cities of over 25,000 inhabitants than any other State in the Union. Some of them, as Boston, Gloucester, and New Bedford, received their impetus from their harbours and shipping; others, as Cambridge, Newton, Malden, and Somerville, must be regarded as reflections of the growth of the "Greater Boston," but of the rest Worcester is the only important one which is not located by natural water-power. The larger manufacturing cities—Fall River, Holyoke, Lowell, and Lawrence—trace their origin and a part, at least, of their present importance to the influence of their rivers. The importance of Holyoke as a manufacturing city dates from the improvement of the power afforded by the Connecticut River, which falls sixty feet in a short distance. At present the river is crossed by a dam 1,000 feet long, giving the most valuable power in New England. At Fall River the river of the same name, the outlet of Watuppa Pond, with a fall of over 100

feet in a half mile, furnished the water-power which gave the first impetus in developing this greatest of American textile centres. Manchester, the largest city in New Hampshire, has grown up beside the famous Amoskeag Falls of the Merrimac River; Franklin utilizes the same waters higher up stream; while Nashua, Lowell, and Lawrence benefit from them farther down. The cases mentioned are but a few of the many scattered over the region from Maine southward to Long Island Sound in which the guiding influence has been the rivers and their available power.

In Pennsylvania, which ranks next to Massachusetts in the number of large cities, the contrast is marked. The streams are no less abundant, but the glaciation over the State was unimportant in its effects on the drainage. The entire southern part of the State was unglaciated, and only in the northeast and northwest corner of the State was there any approach to the condition of diverted stream-courses, lakes, and waterfalls seen in New England. Easily available power, therefore, could not be the controlling factor; it came through the maturely-developed drainage, which made possible the building of canals along the easy grades of the river valleys and the canalizing of some of the rivers themselves. In the early part of the last century the whole of the more populous part of the State was fairly well covered by the canal system. The effect of the canals can be seen in the fact that, with the exception of the ports of Philadelphia and Erie, and Chester on the Delaware River, only two of the present important cities, Lancaster and York, were not touched either by canals or canalized rivers. The cause of their growth is clearly enough in the facilities that the water transportation gave for bringing in the raw material and taking out the manufactured product before the advent of the railroad. Later on, when the railroads were introduced, the first lines paralleled the canals to a large extent, in order to share in the already-established traffic; and hence when the canals were entirely replaced by railroads the cities were not deprived of their transportation facilities.

The conditions in New York have been largely analogous to those in Pennsylvania. A great chain of important cities has grown up along the line of inland navigation which may be said to begin at Buffalo and end at New York. Rochester, Syracuse, Utica, Schenectady, Troy, and Albany complete a chain which can be equalled nowhere else in the country. Of the three other large industrial cities in the State, two—Auburn and Binghamton—have excellent water-power. The former, on the outlet of Owasco Lake, derives its power from the river, which has a fall of 160 feet in the

city limits; and the latter gets its power from the Chenango River at its junction with the north branch of the Susquehanna. The third of the cities, Elmira, not only has valuable power derived from Newtown Creek, but is also connected by the Chemung Canal to Seneca Lake and thence to the Erie Canal, and ranks as one of the most important manufacturing cities in the State.

In the western States the growth of the cities has been more recent than along the Atlantic coast. Many of the largest are located along the Lake shores and on the rivers of the Mississippi system, but most of them have been greatly helped by the rapid development and extension of the railroads. In their industrial development water-power has played little part in most cases, partly because geographic processes have made the water-power of the region slight in comparison with the east, and partly because their growth has been largely in the era of steam, to develop which many of them were readily supplied with fuel from the coal fields of Ohio, Indiana, and Illinois. Minneapolis and St. Paul are two notable exceptions. Located as they are in the heart of the grain-producing country, the immense power furnished by the celebrated Falls of St. Anthony in the Mississippi River has made them the greatest of American milling centres.

Industrial centres which have grown up in response to the presence of natural resources of raw material often present the aspect of cities where from other conditions alone no such growth could be expected. Wilkesbarre and Scranton are good examples. Before the discovery of coal and its use in the iron and steel industries the valley where the two cities now stand was a rich, fertile region devoted almost entirely to agriculture and grazing. The location of the valley between the ridges and the plateau belt of the Appalachian chain, the rugged character of the surrounding country, and the difficulty of communication with the outside world were all against the growth of a populous community. But the unlimited supply of fuel from the rich coal beds altered all this, and the populous mining and manufacturing centres are the result. Pittsburg in any case would have been a good site for a city, since its location alone at the confluence of two large rivers would make it the natural centre of traffic along their valleys. But it is certain that without the near-by coal, gas, and oil fields it would never have reached its present importance. As illustrative of this point an old tradition in the region about the mouth of the Juniata River is interesting. As the story goes, the first settler in the region, a very sagacious person, took up a strip of land commanding the junction of the

Juniata and Susquehanna Rivers, that he might profit from the city which he expected would spring up there. He also did the same thing at the junction of the Allegheny and Monongahela; but this latter tract he sold afterwards because "it was too far West." The one was in a country affording only limited agricultural resources, and is still farm land; the other is in the heart of Pittsburg.

Birmingham, Alabama, with its combination of iron ore and coal in the same region, a natural iron and steel centre; Joplin, Missouri, with its rich deposits of lead and zinc ores; Leadville and Cripple Creek, Colorado; and Butte, Montana, are the types of a large number of smaller cities and towns which have grown up solely because of the wealth of the adjacent mines.

Political Centres.—Political centres are often the direct result of geographical influences, because geography controls both distribution of population and facility of travel; and in the location of the political centre accessibility for the majority of the population is the deciding factor. Few cities, however, may be said to be purely political in character; for even though originally laid out with that purpose in view, the mere aggregation of population that must result is almost sure to attract both commercial and industrial enterprises. In the selection of political centres in the different States the control of geographical conditions is often marked. In a region with uniform surface features, and consequently more or less even distribution of population and equal facilities of travel, the political centre tends toward the geographical centre. Many of the western States are illustrative, as Columbus (Ohio), Indianapolis, Little Rock, Pierre (North Dakota), and others. But where the geographical conditions have been such as to restrict the mass of the population either permanently or for a time, little regard has been paid to the question of the geographical centre. Examples may be found among the Atlantic States where the hilly or mountainous character to the west held the people for many years to the more open, narrow strip along the coast, and where still the greater part of the population is located. Boston, Augusta (Maine), Annapolis, Richmond (Virginia), and Harrisburg (Pennsylvania) are all good examples. Farther to the south, where the coastal area is somewhat wider, the political centres are found nearer the geographical centres.

West of the Mississippi River, where climatic conditions as controlled by geography have made the region west of the 100th meridian suitable only for the support of scattered communities engaged in grazing, the mass of the population and the political centres are in the eastern part of the States. Lincoln (Nebraska) and Topeka

(Kansas) are the best examples. Montana presents another condition, with her capital in the western part of the State in the mountains, because the majority of the people are centred about the mining industry. Nevada and Wyoming ranking among the largest States in the Union have their capitals located each in the extreme corner of the State, but both are only simple responses to the location of the mass of the population. In Nevada nearly one-half the total population is found in a strip covering about 1-13th the total area of the State, near the centre of which strip the capital is located. In Wyoming about 52 per cent. of the population is located in the valley of the North Platte River in the extreme south-east corner of the State, because of the facilities for irrigation; and there the political centre is located. And, finally, in the Pacific States the segregation of the people along the coast to the west of the mountains and the interior deserts of the lava plains is reflected in the location of the State capitals—Salem (Oregon) and Olympia (Washington).

Social Centres and Health Resorts.—The cities here grouped under the head of popular or health resorts have been stimulated in their growth by geographic conditions which make them attractive to the tourist or beneficial to the invalid; in general, they are ocean, mountain, or natural spring resorts.

The attraction of the ocean resorts lies partly in the facilities for boating and bathing, but mainly in the daily occurrence of the cool sea-breeze. Newport and Atlantic City are typical. Newport is built on the southern end of Newport Island, with the ocean on three sides of the city. Much of the scenery round about is very attractive, the Cliff Walk, the Ocean Drive, and the excellent bathing beach being well known. The position of the city on the southern New England coast favours the bathing, because it is shut off by Cape Cod from the cold drift of the Labrador Current, which makes the waters of the region north of the cape so disagreeably cold. And the fact that the city is almost surrounded by water gives it a delightfully moderate climate, and is one of the important factors in making it the most exclusive resort in the country. Atlantic City, built on one of the sandy bars of the New Jersey coast, has a good beach with excellent bathing, and enjoys a climate so tempered by the ocean influence that it is frequented by many visitors in winter as well as in summer. Fogs are rare, and owing to the extensive areas of pine forest and dry sandy soil which lie inland from the coast, it is entirely free from the malaria which is so common in the low areas of other parts of the State. Atlantic

City may be regarded as one of the greatest of the American popular resorts; for although it has a permanent population of only 28,000, the transient summer population is estimated at not less than a quarter of a million. The resorts of southern California, where so many tourists seek to escape the northern winters, owe their attractions to the even more marked ocean control, which gives them a climate almost tropical in character.

Asheville and Colorado Springs are probably the best known of the mountain resorts. The former is located in the mountains of North Carolina at an elevation of 2,300 feet, with higher ridges, which shelter it on the north and east, while at a distance the ridges west of the French Broad River shut off the cold northwest winds and snows. This protection, together with the altitude, the dry soil, and the cool, invigorating atmosphere, gives it a climate especially favourable to persons suffering from pulmonary diseases. Colorado Springs is of much the same type; it is, however, at a greater elevation—6,000 feet, with a consequently rarer and more invigorating atmosphere, and, from its location at the eastern base of the Rocky Mountains, it has the dryness of an inland desert, and finally it enjoys the distinctly mountain feature of warm day or sun temperatures and cool shade or night temperatures, which are so important to invalids. Similar resorts, of lesser degree, benefiting from the effects of altitude and mountain conditions, are to be found all through the country, the White Mountains of New Hampshire and the Adirondacks of New York being, perhaps, the most important.

Widely scattered over the country there are regions in which geological and geographical forces have given natural mineral-bearing or "medicinal" springs, about which resorts have sprung up. Hot Springs, Arkansas, is the most prominent. The tradition makes them the much-desired Fountain of Youth, in the search for which Ponce de Leon lost his life and which de Soto later discovered, but too late to restore his health. The beneficial properties were certainly known to the Indians long before the advent of the white man, and from the original cluster of tepees and wigwams which they built have grown the present city and the Government Reservation, where thousands of visitors annually make use of the baths. In other sections of the country numerous resorts have grown up about springs boasting curative powers, as Hot Springs (Virginia), Cambridge Springs (Pennsylvania), Poland Springs (Maine), and others.

Summary.—The consideration of the geographical control over the location of cities and towns might be carried into much greater

detail—for example, to cover the growth of the better class of suburbs and residential districts on the higher lands about the larger cities; the location of the suburbs of manufacturing towns to the west of the factories, to escape the smoke; the beginning of many of the older New England towns on the flat areas of glacial sand plains; the location of a multitude of fishing towns at the heads of little bays; the building of mining towns in the valleys, sometimes with but a single street, or, again, built in the form of the letter T at the junction of two valleys; or towns at the gaps and passes across the mountains where travel must go. But the object here has been only to show with a few brief examples the chief geographic controls in the growth of the larger centres of population; the factors of ready communication developing commerce; natural power and raw materials stimulating industrial growth; and healthful conditions of location and climate creating popular and health resorts.

PHOTOGRAPHING WILD ANIMALS.*

The fact that 16,000 copies of this book were printed within a few months after it was sent to press indicates that the German public found in the volume, selling at about \$3.00 in Germany, features commending it to unusual attention. This is true as regards both its letterpress and its illustrations. It was written by one of the most successful collectors of museum specimens of wild animal life that have ever visited Africa—a man also of attainments in biological science, if not, in all respects, of the highest authority. In its illustrations it stands alone in zoological literature, because the author is the first to use on a large scale the telescopic camera by day and flashlight by night. He shows wild animal life just as it presented itself to the camera amid natural surroundings in the forests, rivers, swamps and jungle, or on the wide plains or mountain slopes. The result is that both text and illustrations are of unusual interest, and a unique contribution to our knowledge of African wild life.

Four of the illustrations are here shown. As specimens of photography the 302 pictures are of uneven merit, many of them

* MIT BLITZLICHT UND BÜCHSE. NEUE BEOBSACHTUNG UND ERLEBNISSE IN DER WILDNIS IN MITTEN DER TIERWELT VON ÄQUATORIAL-OSTAFRIKA. VON C. G. SCHILLINGS. xvi and 558 pp., and 302 illustrations from photographs. (Second Edition.) R. Voigtländer, Leipzig, 1905.